Can I handle the scalpel? Different views on critical subtask assessment between residents and expert surgeons

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Introduction

- **Experts** have **two roles** once they entrust residents to **'handle the scalpel'** in the operation theatre:
  As a **teacher**: Allowing the resident **to progress to autonomous** task performance.
  As an **expert**: Striving for the **best possible outcome** for the patient.

- **Residents** have **two goals** as **learners** in the operation theatre:
  a. 'Handle the scalpel' **as long as possible.**
  b. **Elicit expert information** when their **expertise becomes insufficient**.

- **Complex or critical subtasks execution has an effect on** :
  a. **Experts**: **outcome** becomes **more important** than **teaching.**
  b. **Residents**: they need **teachers** even more to 'keep the scalpel' themselves.

Objective

What is the **complexity** of all the **different subtask** of a **single** orthopaedic surgical procedure:

a. **According** to the **experts**? b. **According** to the **residents**?

Methods

- **56 subtasks** were identified in an **uncemented total hip replacement** procedure for osteoarthritis.

- 21 residents and 17 experts rated **how much attention** they **need** for **every subtask** of the procedure on a **5-point Likert scale.**

- **High attention sub tasks** were defined as a median attention score of **4** or more.

- We asked the participants to provide **arguments for high attention** scores.

Results

- Both experts and residents expected to need **normal attention** for **the majority** of the subtasks.

- **Experts** had:
  a. **High attention** scores on **12 subtasks** (table).
  b. Frequent **Arguments: 'Crucial for end result', 'Essential for outcome'**, **'Prevention of complications such as luxation'.**

- **Residents** had:
  a. **High attention** scores on **8 subtasks** (table).
  b. Frequent **Arguments**: **'Little room for error', 'Is difficult', 'Must be perfect'.**

- The **majority** of these **critical tasks can be characterised as 'point of no return' judgment and decision making** (table).

table: High attention subtasks of experts and residents

	Subtask	Skill (predominantly)	Experts High attention	Residents High attention
1	Assessing angle and height of collum osteotomy femur	Judgement / Decision making	**Yes**	**Yes**
2	Exposing acetabulum with homan retractors / pins	Motor	**Yes**	
3	Reaming acetabulum in right angle and volume	Motor + Judgement / Decision making	**Yes**	**Yes**
4	Testing trial cup acetabulum and assess definite size	Judgement / Decision making	**Yes**	**Yes**
5	Insert cup acetabulum	Motor	**Yes**	**Yes**
6	Assessing cup position acetabulum	Judgement / Decision making	**Yes**	**Yes**
7	Assessing direction of broaching femur	Judgement / Decision making	**Yes**	
8	Assess position trial prosthesis and determine off set femur	Judgement / Decision making	**Yes**	**Yes**
9	Assessing definitive stem size femur	Judgement / Decision making	**Yes**	
10	Definitive stem placement femur	Motor	**Yes**	
11	Assessing definitive stem position and anteversion angle	Judgement / Decision making	**Yes**	**Yes**
12	Assessing definitive position, stability and lenght uncemented	Judgement / Decision making	**Yes**	**Yes**
	Total		**12**	**8**

Conclusion and discussion:

- **Experts'** high **attention** for subtasks was different from **residents':**
  Experts: effects on patient **outcome and complications**.
  Residents: more **anxious** about their **own task performance.**

- **Critical subtasks are characterised by judgment and decision making as key competences.**

- **Experts and residents** might both **benefit** when they **identify and discuss critical and complex subtasks before** going into the operation theatre, because:

  A. Experts as teachers can adapt their guiding strategies to the residents' needs.

  B. Residents as learners need to appreciate when the focus of experts shifts towards patient outome rather than to teaching.

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